

From Counts to Context: Functional Citation Analysis of International Journal of Information Management

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Abstract

International Journal of Information Management is the most influential journal in the field of Library and Information Science with highest Journal Impact Factor in the subject field. The present study investigated the contextual pattern of citations accrued by the top 100 highly cited articles published in the journal to understand the actual impact of scholarly writings in LIS.

The contextual data for the study was collected from the Web of Science (WoS) database using the enriched cited references. The bibliographic details of the top 100 highly cited articles were exported. Further, 18478 classified citations under the categories “Background”, “Basis”, “Support”, “Differ” and “Discuss” displayed at article level were recorded. The top 100 highly cited publications collectively gathered 66193 citations, of which 18478 (27.9%) citations were further classified based on the citation function. 65.5% of the enriched citations were grouped as “background” indicating the authors mostly cite a paper to establish thematic framework for the study. 0.20% “differ” citations indicates the meagre scientific discord and 3.3% “support” citations specifies the scientific concord associated with LIS research. The prominence of established research design is visible with the 10.4% “basis” citations. Citation analysis is a prominent technique to evaluate the research impact. Conventional citation techniques lack the ability to disclose the author’s intent in citing a paper. It is essential to understand the purpose of citing a paper, and this can be examined through contextual citation analysis. Our illustrative investigation

examined the most influential LIS journal to reveal the actual impact induced by the publications. All citations do not share equal importance; hence they should be weighed based on merit. Contextual citation analysis should be explored further to unleash the real influence of citations.

Keywords: Citation context analysis, Library and Information Science, Functional citations, IJIM

Introduction

Citations are considered as academic credit. Consequently, citation analysis is a dominant technique for research impact assessment. The idea of quantifying citations to understand the impact of scholarly writings was popularized by Eugene Garfield by introducing Science citation index in 1964. Later scholars adopted citation analysis as an easy and effective tool to measure the impact of scientific writings. There are substantial number of citation studies (Meyer & Spencer, 1996; Schoonbaert & Roelants, 1996; Small, 1981; Uzunboyly et al., 2011) that explored the pattern of citations across different subject domains. Further, Citations are widely used as an impact tracker, book mark and intellectual heritage (Kostoff, 1998). Despite its many advantages, citations and traditional citation analysis has several drawbacks. All the citations are treated equally in the conventional approach without considering the its function. A citation can be

positive, negative or neutral (Kostoff, 1998), thus treating them as equal will lead to inaccuracy in measuring research impact.

The need for classifying citations based on the purpose of citing a paper gained the attention of scholars. Recently Web of Science (Citation Function Class, 2025) and Semantic scholar (Cohan et al., 2019) has been started to classify citations based on intent to help the scholars to understand the relation between cited and citing paper. The present study investigates the polarity-based distribution of citations across publications in the top ranked LIS journal, International Journal of Information Management. We made use of Web of Science citation function class to identify the context-based distribution of citations. Citation context analysis is complementary tool to conventional citation analysis to enhance the accuracy of research impact assessment.

Literature Review

Citation is the practice of quoting others'

ideas, thoughts, and concepts in scholarly writing. It acknowledges an individual's work and helps readers to trace the original source of information. Proper citation also lends scientific credibility and prestige to the work (Bahadoran et al., 2020). Hence citation analysis is a prominent tool to evaluate research impact, to construct quantitative research metrics indicators and to quantify science and technology research outputs (Moed, 2009). Despite the advantages, traditional citation analysis has been criticized for several drawbacks. Mainly all the citations are treated as equal merit and there exists systemic biases that effects the aggregate result (Kostoff, 1998). These major challenges results in giving an aerated image about the research impact.

If a paper's reputation is calculated purely based on the number of citations accrued, then it will lead to the promotion of inaccurate and controversial information irrespective of their importance (Alvarez & Gomez, 2016). Hence it is very important to classify citations based on the intent. Citation background (Dong & Schäfer, 2011), citing behaviour (Bornmann & Daniel, 2008), and context of citation (Wang et al., 2019) helps to differentiate the purpose of citing a paper.

Considering all citation as a reward ignore the actual purpose of citing a paper. In scholarly writing an author may express agreement or disagreement with the with the cited work. A study conducted by Worrall and Cohn (2023) states that a citation can be either favourable or critical. Thus, there exists a need to differentiate citations based on the context in which a paper is cited. This novel approach of analysing classified citations is popularly known as Citation Context Analysis (CCA). Contextual citation analysis is a technique that classifies citations based on its function by analysing the text surrounding it (Cronin, 1984). CCA is not an alternative to traditional citation analysis but a complementary technique designed to enhance the accuracy of traditional citation-based metrics.

Classified Citations in Web of Science (WoS)

Semantic classification of citations is a challenging task. It can be done with the help of machine learning and natural language processing (Kunnath et al., 2021). Recently Clarivate introduced enriched cited references in the Web of Science database which classifies citations into "Background", "Basis", "Differ", "Support" and "Discuss"

(Donner et al., 2025). The enriched cited references are designed to capture the authors intent in citing a paper.

WoS defines 5 functional citation classes as follows; (Citation Function Class, 2025)

- Background citations: Citations that orients the present study within the existing subject domain. Usually appears in the introduction section, but not limited to it.
- Basis Citations: Reports the datasets, methods and techniques cited from a document
- Discuss citations: Citations that express the relationship between the results of cited and citing document
- Support citations: Citations that explicitly express research agreements
- Differ Citations: Citations that explicitly express research disagreements

Objectives

- To understand the distribution of publications and citations across the top 100 highly cited publications in International Journal of Information Management.
- To analyse the context-based citations received by the impactful publications
- To explore the chronological trend in contextual citation patterns.

Methodology

The present study aimed to understand the citation dynamics associated with the top 100 articles published in the International Journal of Information Management. We used Web of Science database to gather the contextual citation data. Clarivate has started to provide contextual citation data in the Web of Science database for many citing papers at article level (Donner et al., 2025). We used the same feature to identify the citation function. The journal articles were identified using the advance query SO= International journal of information management. The necessary bibliographic details of the top 100 highly cited papers were exported. Further the contextual citation data was collected by visiting each articles profile. The data was analysed using MS Excel and visualized with the help of Tableau public.

Data Analysis and Interpretation

Chronological Distribution of Publications and Citations

The top 100 highly cited articles in the International Journal of Information Management together garnered 66193 citations. 2020 produced highest number of influential publications (21) followed by 2019 (19) and 2018 (9). There exists a

gradual increase in the number of impactful articles disseminated through the LIS journal. Recent publications holding higher concentration of citations indicates emerging trend in LIS research and the scholar's

tendency to cite contemporary research rather focusing on earlier published works. 2019 ranked first with 11498 citations followed by 2020 (10659) and 2021 (8339). The average citation per publication is 661.93.

Table 1: Chronological distribution of publications and citations

Year	No. of Titles	Total Citations
2006	1	440
2007	2	853
2009	1	436
2010	3	1901
2011	6	2915
2012	2	784
2013	5	3224
2014	6	3800
2015	5	5266
2016	5	2677
2017	3	2089
2018	9	6006
2019	19	11498
2020	21	10659
2021	8	8339
2022	3	2715
2023	1	2591
Total	100	66193

Contextual Citation analysis: Web of Science classified 18478 citations (27.9% of

total citations) into different categories based on the purpose of citing a paper. 72.1%

citations were unclassified. 11561 citations were grouped as “background” indicating the importance of research published through the international journal of information management in underlying the fundamental and conceptual base for library and information science. Background citations showcase the theoretical or conceptual foundation used to draw the research outline. The dense concentration of background citations prove that scholars mostly cite paper to define or introduce their current study and

to fit them in the existing knowledge domain. 4351 citations were grouped as “discuss” indicating the relation between the result discussed in the current research and cited work. The prominence of established research design is visible with the 1921 “basis” citations. 37 “differ” citations indicates the meagre scientific discord and 608 “support” citations specifies the scientific concord associated with LIS research.

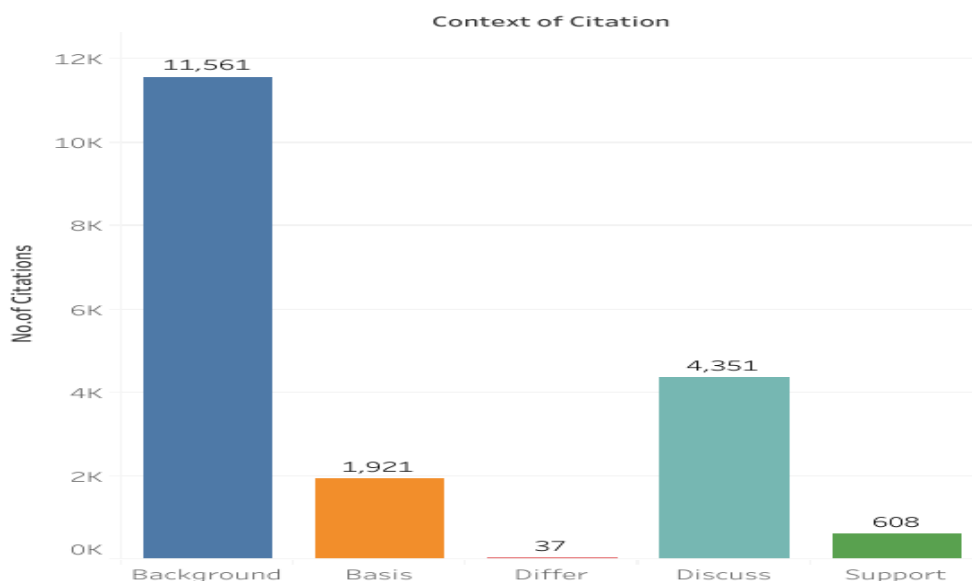


Figure 1: Context wise distribution of Citations

Chronological Distribution of Contextual Citations

Year-wise distribution of contextual citations is displayed in Table 3. Highest number of background citations were garnered by the

publications in 2019 (2481) followed by 2020 (2184). This specifies that the publications act as a subject foundation for the upcoming research. The year 2019 ranked first with highest number of support citations,

while publications in 2014 accrued highest number of differ citations (8). The number of supporting and contrasting citations were meagre compared to other citation categories indicating the neutral approach followed by scholars in citing a paper. Publications from

2018 to 2021 exhibits a domination in all 5 citation categories. Hence it affirms that research engagement on recent LIS scholarly literature is higher than that of early published works. Further it points out the growth of subject domain.

Table 2: Chronological distribution of contextual citations

Year	Background	Basis	Support	Differ	Discuss
2006	28	2	1	0	6
2007	74	6	4	0	29
2009	66	15	9	1	30
2010	152	23	5	0	29
2011	291	47	22	1	112
2012	87	11	6	0	42
2013	264	41	14	0	77
2014	500	77	57	8	180
2015	664	63	21	0	187
2016	429	46	18	0	140
2017	367	92	59	6	190
2018	1150	150	55	5	383
2019	2481	372	148	7	925
2020	2184	262	120	6	792
2021	1602	628	39	2	797

2022	609	43	15	0	206
2023	613	43	15	1	226
Total	11561	1921	608	37	4351

Conclusion

Citation analysis is a popular tool used for research evaluation. Traditional citation analysis techniques lack the ability to understand the authors view in citing a paper. Hence the overreliance on quantity conceals the actual quality of a research writing. This limitation of citation analysis can be eliminated by incorporating the purpose of citing a paper. Contextual citation analysis redefines the research impact by corroborating the context or function of a citation. Hence citation context analysis goes beyond citations to measure the real impact of research. The present study solely focuses on the top ranked LIS journal, the international journal of Information Management. We found that all citations do not share equal importance; hence they

should be weighed based on merit. Citation context analysis should be extended further into Subject, Institutional and Author level.

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